

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Previously Presented): A method comprising:

receiving a request via a network layer device for activation or modification of a network service account of a subscriber;

in response to receiving the request, querying a server with the network layer device for information relating to a service profile that is associated with the subscriber; and

dynamically configuring a control object stored by a data link layer device with the network layer device in accordance with the service profile to control the data link layer device to facilitate packet transmission for the subscriber between the data link layer device and the network layer device in accordance with the service profile.

Claim 2 (Previously Presented): The method of claim 1, further comprising:

receiving a multicasting protocol message from a subscriber device associated with the subscriber; and

dynamically configuring multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicasting protocol message.

Claim 3 (Currently Amended): The method of claim 2, wherein the multicasting protocol message identifies a multicast stream, the method further comprising:

associating the multicast stream with one of a virtual circuit, a virtual local area network, or an address; and

encapsulating and forwarding packets for the multicast stream to the data link layer device in accordance with the association,

wherein dynamically configuring ~~a multicast filtering table~~ multicast filter information comprises dynamically configuring the ~~multicast filtering table~~ multicast filter information to associate the one of a the virtual circuit, the virtual local area network, or the address that is associated with the multicast stream with one of a virtual circuit or an address that is associated with the subscriber device.

Claim 4 (Currently Amended): The method of claim 2, ~~the method~~ further comprising:

receiving a plurality of multicast protocol messages;

replicating a multicast stream for the data link layer device to produce a copy of the multicast stream; and

forwarding the copy of the multicast stream to the data link layer device,

wherein dynamically configuring ~~a multicast filtering table~~ multicast filter information comprises dynamically configuring the ~~multicast filtering table~~ multicast filter information to cause the data link layer device to replicate the copy of the multicast stream for each of a plurality of subscriber devices in accordance with the multicast protocol messages.

Claim 5 (Currently Amended): The method of claim 2, wherein the multicast protocol message requests a multicast stream, the method further comprising:

maintaining information that identifies multicast streams as one of premium or non-premium; and

determining whether the requested multicast stream is premium,

wherein dynamically configuring ~~a multicast filtering table~~ multicast filter information comprises dynamically configuring the ~~multicast filtering table~~ multicast filter information stored by the data link layer device based on the determination.

Claim 6 (Previously Presented): The method of claim 5, further comprising:
replicating the requested multicast stream at the network layer device on a per data link layer device basis when the requested multicast stream is premium; and
replicating the requested multicast stream at the network layer device on a per subscriber basis when the requested multicast stream is non-premium.

Claim 7 (Previously Presented): A method comprising:
receiving a request via a network layer device for transmission of packets according to a quality of service class from a subscriber device; and
dynamically configuring a quality of service profile stored by a data link layer device for a layer-2 link between the data link layer device and the subscriber device with the network device to control the data link layer device to forward packets for the subscriber device via the layer-2 link according to the quality of service profile to facilitate packet transmission according to the requested quality of service class.

Claim 8 (Previously Presented): The method of claim 7, wherein the request for transmission of packets comprises a request for a voice over Internet Protocol call that specifies the subscriber device.

Claim 9 (Previously Presented): The method of claim 7, wherein dynamically configuring a quality of service profile comprises controlling the data link layer device to provide preferential queuing of the packets based on the requested quality of service class.

Claim 10 (Canceled).

Claim 11 (Previously Presented): The method of claim 1, wherein receiving a request for activation of an account comprises receiving a message indicating physical connection of a customer premises equipment device to a network.

Claim 12 (Original): The method of claim 1, wherein dynamically configuring a control object stored by a data link layer device comprises sending a control message from the network layer device to the data link layer device.

Claim 13 (Previously Presented): The method of claim 12, wherein sending a control message comprises sending the control message via a virtual local area network that is reserved for transmission of the control message.

Claim 14 (Original): The method of claim 12, wherein sending a control message comprises sending an in-band Internet Protocol message.

Claim 15 (Previously Presented): The method of claim 1, wherein the data link layer device comprises one of a switch, an access multiplexer, or a customer premises equipment device.

Claim 16 (Previously Presented): The method of claim 1, wherein the network layer device comprises a service edge router.

Claim 17 (Original): The method of claim 16, wherein the service edge router comprises a broadband remote access server.

Claim 18 (Previously Presented): A network layer device comprising a control unit that receives a request for activation of a network service account of a subscriber, queries a server for information relating to a service profile that is associated with the subscriber in response to receiving the request, and dynamically configures a control object stored by a data link layer device in accordance with the service profile to control the data link layer device to facilitate packet transmission for the subscriber between the data link layer device and the network layer device in accordance with the service profile.

Claim 19 (Previously Presented): The network layer device of claim 18, wherein the control unit receives a multicasting protocol message from a subscriber device associated with the subscriber, and dynamically configures multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicast protocol message.

Claim 20 (Currently Amended): The network layer device of claim 19, wherein the multicasting protocol message identifies a multicast stream, and the control unit associates the multicast stream with one of a virtual circuit, a virtual local area network, or an address, forwards packets for the multicast stream to the data link layer device in accordance with the association, and dynamically configures the multicast filter information to associate the one of a the virtual circuit, the virtual local area network, or the address that is associated with the multicast stream with one of a virtual ~~circuit~~, circuit or an address that is associated with the subscriber device.

Claim 21 (Original): The network layer device of claim 19, wherein the control unit receives a plurality of multicast protocol messages, replicates a multicast stream to produce a copy of the multicast stream, forwards the copy of the multicast stream to the data link layer device, and dynamically configures the multicast filter information to cause the data link layer device to replicate the copy for each of a plurality of subscriber devices in accordance with the multicast protocol messages.

Claim 22 (Previously Presented): The network layer device of claim 19, wherein the multicast protocol message requests a multicast stream, and the control unit maintains information that identifies multicast streams as one of premium and non-premium, determines whether the requested multicast stream is premium, and dynamically configures the multicast filter information stored by the data link layer device based on the determination.

Claim 23 (Previously Presented): The network layer device of claim 22, wherein the control unit replicates the requested multicast stream on a per data link layer device basis when the requested multicast stream is premium, and replicates the requested multicast stream on a per subscriber basis when the requested multicast stream is non-premium.

Claim 24 (Previously Presented): A network layer device comprising a control unit that receives a request for transmission of packets according to a quality of service class from a subscriber device, and dynamically configures a quality of service profile stored by a data link layer device for a layer-2 link between the data link layer device and the subscriber device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link according to the requested quality of service class.

Claim 25 (Previously Presented): The network layer device of claim 24, wherein the request comprises a request for a voice over Internet Protocol call that includes the subscriber device.

Claim 26 (Previously Presented): The network layer device of claim 24, wherein the control unit dynamically configures the quality of service profile to control the data link layer device to provide preferential queuing of the packets based on the requested quality of service class.

Claim 27 (Canceled).

Claim 28 (Previously Presented): The network layer device of claim 18, wherein the control unit detects activation of the account by receiving a message indicating physical connection of a customer premises equipment device to a network.

Claim 29 (Original): The network layer device of claim 18, wherein the control unit sends a control message to the data link layer device to dynamically configure the control object stored by the data link layer device.

Claim 30 (Previously Presented): The network layer device of claim 29, wherein the control unit sends the control message via a virtual local area network that is reserved for transmission of the control message.

Claim 31 (Original): The network layer device of claim 18, wherein the data link layer device comprises one of a switch, an access multiplexer, and a customer premises equipment device, and the network layer device comprises a provider service edge router.

Claim 32 (Previously Presented): The network layer device of claim 18, wherein the network layer device comprises a broadband remote access server.

Claim 33 (Currently Amended): A computer-readable storage medium ~~comprising~~ encoded with instructions that cause a programmable processor to:

receive a request for activation of modification of a network service account of a subscriber;

in response to receiving the request, query a server for information relating to a service profile that is associated with the subscriber; and

dynamically configure a control object stored by a data link layer device in accordance with the service profile to control the data link layer device to facilitate packet transmission for the subscriber between the data link layer device and the network layer device in accordance with the service profile.

Claim 34 (Currently Amended): The computer-readable storage medium of claim 33, further ~~comprising~~ encoded with instructions that cause a programmable processor to:

receive a multicasting protocol message from a subscriber device associated with the subscriber, and

dynamically configure multicast filter information stored by the data link layer device to control the data link layer device to perform multicast elaboration in accordance with the multicast protocol message.

Claim 35 (Currently Amended): The computer-readable storage medium of claim 34, wherein the multicasting protocol message identifies a multicast stream, the medium further ~~comprising~~ encoded with instructions that cause a programmable processor to:

associate the multicast stream with one of a virtual circuit, a virtual local area network, or an address; and

forward packets for the multicast stream to the data link layer device, the packets encapsulated according to the associated one of the virtual circuit, the virtual local area network, ~~and~~ or the address,

wherein the instructions that cause a programmable processor to dynamically configure a ~~multicast filtering table~~ the multicast filter information comprise instructions that cause a programmable processor to associate the one of a the virtual circuit, the virtual local area network, or the address that is associated with the multicast stream with one of a virtual circuit or an address that is associated with the subscriber device.

Claim 36 (Currently Amended): The computer-readable storage medium of claim 34, wherein the multicasting protocol message identifies a multicast stream, the medium further ~~comprising~~ encoded with instructions that cause a programmable processor to:

maintain information that identifies multicast streams as one of premium and non-premium; and

determine whether the requested multicast stream is premium,

wherein the instructions that cause a programmable processor to dynamically configure a multicast filtering table comprise instructions that cause a programmable processor to dynamically configure the multicast filtering table based on the determination.

Claim 37 (Currently Amended): The computer-readable storage medium of claim 36, further ~~comprising~~ encoded with instructions that cause a programmable processor to:

replicate the requested multicast stream at the network layer device on a per data link layer device basis when the requested multicast stream is premium; and

replicate the requested multicast stream at the network layer device on a per subscriber basis when the requested multicast stream is a non-premium.

Claim 38 (Currently Amended): A computer-readable storage medium ~~comprising~~ encoded with instructions that cause a programmable processor of a network layer device to:

receive a request for transmission of packets according to a quality of service class from a subscriber device; and

dynamically configure a quality of service profile stored by a data link layer device for a layer-2 link between the data link layer device and the subscriber device to control the data link layer device to facilitate packet transmission for the subscriber device via the layer-2 link according to the requested quality of service class.

Claim 39 (Previously Presented): The computer-readable medium of claim 38, wherein the request comprises a request for a voice over Internet Protocol call that includes the subscriber device.

Claim 40 (Currently Amended): The computer-readable storage medium of claim 38, wherein the instructions that cause a programmable processor of a network layer device to dynamically configure a quality of service profile comprise instructions that cause a the programmable processor of the network layer device to control the data link layer device to provide preferential queuing of packets based on the requested quality of service class.

Claim 41 (Canceled).

Claim 42 (Previously Presented): The computer-readable storage medium of claim 33, wherein the instructions that cause a programmable processor to detect activation of an account comprise instructions that cause a programmable processor to receive a message indicating physical connection of a customer premises equipment device to a network.

Claim 43 (Previously Presented): The computer-readable storage medium of claim 33, wherein the instructions that cause a programmable processor to dynamically configure a control object stored by a data link layer device comprises instructions that cause a programmable processor to send a control message from a network layer device to the data link layer device.

Claim 44 (Previously Presented): A method comprising:

- receiving a request via a data link layer device for activation or modification of a network service account of a subscriber;
- forwarding the request from the data link layer device to a network layer device;
- storing a control object within the data link layer device;
- receiving a control message from the network layer device by the data link layer device, the control message sent by the network layer device to the data link layer device in response to a the request and including information relating to a service profile for the subscriber;
- dynamically configuring the control object based on the control message; and
- transmitting packets from the data link layer device to the network layer device for the subscriber in accordance with the service profile based on the configuration of the control object.

Claims 45 and 46 (Canceled).

Claim 47 (Previously Presented): A method comprising:

- storing a control object that comprises a quality of service profile for a layer-2 link between a data link layer device and a subscriber device within the data link layer device;
- receiving a request for transmission of packets according to a quality of service class from the subscriber device at the data link layer device;
- forward the request from the data link layer device to a network layer device;
- receiving a control message that comprises quality of service information from the network layer device at the data link layer device, the control message sent by the network layer device in response to the request;
- dynamically configuring the quality of service profile based on the quality of service information; and
- transmitting the packets for the subscriber device via the layer-2 link according to the quality of service information.

Claim 48 (Previously Presented): The method of claim 47, wherein the request comprises a request for a quality of service class for a unicast packet flow, and transmitting the packets for the subscriber device comprises transmitting packets for the unicast packet flow according to the requested quality of service class.

Claim 49 (Original): The method of claim 48, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

Claim 50 (Previously Presented): The method of claim 47, wherein transmitting the packets comprises providing preferential queuing of the packets based on the quality of service information.

Claim 51 (Previously Presented): The method of claim 44, wherein the network layer device comprises a service edge router, and the data link layer device comprises one of a switch, an access multiplexer, or a customer premises equipment device.

Claim 52 (Previously Presented): The method of claim 44, wherein network layer device comprises a broadband remote access server.

Claim 53 (Previously Presented): A data link layer device, comprising a control unit to:

- receive a request for activation or modification of a network service account of a subscriber;
- forward the request to a network layer device;
- store a control object;
- receive a control message from a network layer device, the control message sent by the network layer device in response to the request and including information relating to a service profile for the subscriber;
- dynamically configure the control object based on the control message; and
- transmit packets to the network layer device in accordance with the service profile based on the configuration of the control object.

Claims 54 and 55 (Canceled).

Claim 56 (Previously Presented): A data link layer device, comprising a control unit to:

- receive a request for transmission of packets according to a quality of service class from a subscriber device;
- forward the request to a network layer device;
- store a control object that comprises a quality of service profile for a layer-2 link between the data link layer device and the subscriber device;
- receive a control message from the network layer device, the control message sent by the network layer device in response to the request and including quality of service information;
- dynamically configure the quality of service profile based on the quality of service information; and
- transmit the packets for the subscriber device via the layer-2 link according the quality of service information.

Claim 57 (Previously Presented): The data link layer device of claim 56, wherein the request comprises a request for a quality of service class for a unicast packet flow, and the control unit transmits packets for the unicast packet flow according to the requested quality of service class.

Claim 58 (Original): The data link layer device of claim 57, wherein the unicast packet flow comprises a packet flow for a voice over Internet Protocol call that includes the subscriber device.

Claim 59 (Previously Presented): The data link layer device of claim 56, wherein the control unit provides preferential queuing of the packets based on the quality of service information.

Claim 60 (Previously Presented): The data link layer device of claim 53, wherein the network layer device comprises a service edge router, and the data link layer device comprises one of a switch, an access multiplexer, or a customer premises equipment device.

Claim 61 (Original): The data link layer device of claim 53, wherein the network layer device comprises a broadband remote access server.

Claim 62 (Currently Amended): A computer-readable storage medium ~~comprising~~ encoded with instructions that cause a programmable processor to:

- receive a request for activation or modification of a network service account of a subscriber via a data link layer device;
- forward the request from the data link layer device to a network device;
- store a control object;
- receive a control message from a the network layer device, the control message sent by the network layer device in response to a the request and including information relating to a service profile for the subscriber;
- dynamically configure the control object based on the control message; and
- transmit packets from the data link layer device to the network layer device for the subscriber in accordance with the service profile based on the configuration of the control object.

Claims 63 and 64 (Canceled).

Claim 65 (Currently Amended): A computer-readable storage medium ~~comprising~~ encoded with instructions that cause a programmable processor to:

- store a control object that comprises a quality of service profile for a layer-2 link between a data link layer device and a device;
- receive a request for transmission of packets according to a quality of service class from a subscriber device at the data link layer device;
- forward the request from the data link layer device to a network layer device;
- receive a control message that comprises quality of service information from the network layer device, the control message sent by the network layer device in response to the request;
- dynamically configure the quality of service profile based on the quality of service information; and
- transmit packets for the subscriber device via the layer-2 link according the quality of service information.

Claim 66 (Previously Presented): The computer-readable medium of claim 65, wherein the request comprises a request for a quality of service class for a unicast packet flow, and the instructions that cause a programmable processor to transmit the packets for the subscriber device comprise instructions that cause a programmable processor to transmit packets for the unicast packet flow according to the requested quality of service class.

Claims 67-92 (Canceled).

Claim 93 (Previously Presented): The method of claim 11,
wherein dynamically configuring the control object stored by the data link layer device with the network layer device comprises sending a control message from the network layer device to the data link layer device via a layer-2 control channel,
the method further comprising receiving at least one of a synchronization rate, a media access control address, or queuing profile information for the customer premises equipment from the data link layer device via the layer-2 control channel.

Claim 94 (Previously Presented): The method of claim 44, wherein receiving a control message from the network layer device comprises receiving the control message via a layer-2 control channel, and receiving a request for activation or modification of a network service account of a subscriber comprises detecting coupling of a customer premises equipment to network by the data link layer device, the method further comprising:

receiving at least one of a synchronization rate, a media access control address, or queuing profile information for the customer premises equipment at the data link layer device;
and

forwarding the at least one of the synchronization rate, media access control address, or queuing profile information from the data link layer device to the network layer device via the layer-2 control channel.

Claim 95 (Previously Presented): The method of claim 1, wherein dynamically configuring the control object stored by the data link layer device with the network layer device comprises sending a control message from the network layer device to the data link layer device via at least one of an Ethernet or tunneling protocol control channel.

Claim 96 (Previously Presented): The method of claim 44, wherein receiving a control message from the network layer device comprises receiving the control message via at least one of an Ethernet or tunneling protocol control channel.

Claim 97 (Currently Amended): A method comprising:
receiving a request via a network layer device for a multimedia service from a subscriber device; and
sending a control message from the network layer device to a data link layer device via at least one of an Ethernet or tunneling protocol control channel to ~~configuring~~ configure a control object stored by a data link layer device with the network layer device to control the data link layer device to provide data link layer functionality in accordance with the request.

Claim 98 (Previously Presented): The method of claim 97, wherein sending a control message comprises sending the control message via a virtual local area network that is reserved for transmission of the control message.